

REMARKS

Applicants have carefully reviewed the Office Action dated July 12, 2010, and thank the Examiner for the detailed review of the pending claims. Applicants have amended claims 2, 26, 29 and 30. By way of this amendment, no new matter has been added. Claims 1, 3 – 13, 15, 17 and 19 were previously cancelled. Accordingly claims 2, 14, 16, 18 and 20 – 30 remain pending in this application. At least for the reasons set forth below, Applicants respectfully traverse the foregoing rejections.¹

Claim Rejections – 35 U.S.C. § 103

I. The Law:

"To establish prima facie obviousness of a claimed invention, all the claim recitations must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j).

"The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure." *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). "It can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way that the claimed invention does." *KSR Int'l v. Teleflex, Inc.*, 127 S.Ct. 1727, 1741 (2007).

II. Clarke in view of Brenner and Araki

Claims 2, 14, 16, and 18-26 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,211,327 to Clarke et al. (hereinafter, "Clarke") in view of U.S.

¹ As Applicants' remarks with respect to the Examiner's rejections are sufficient to overcome these rejections, Applicants' silence as to assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, motivation to combine references, assertions as to dependent claims, etc.) is not a concession by Applicants that such assertions are accurate or such requirements have been met, and Applicants reserve the right to analyze and dispute such assertions/requirements in the future. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicants expressly do not acquiesce to the taking of Official Notice, and respectfully request that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03. Applicants respectfully request reconsideration of the present application in view of the above amendment and the following remarks.

Patent No. 6,365,866 to Brenner et al. (hereinafter, “Brenner”) and U.S. Patent No. 4,020,312 to Araki et al. (hereinafter, “Araki”). Applicants respectfully traverse the rejection.

In order to support a rejection under 35 U.S.C. § 103(a), the rejected claims must be obvious in light of the cited references. Because Applicants’ independent claim 2 is not obvious in light of *Clarke* in view of *Brenner*, Applicants respectfully traverse these rejections.

a. Independent Claim 2

Independent claim 2, as amended, recites in part: “[a] process for joining components for torque transmission in a vehicle, the components being made from hardenable steel and having a material thickness, comprising... melting the steel in the vicinity of the weld line over the entire material thickness, wherein the energy per unit length introduced by the welding process is in the range from 234 J/mm to 3360 J/mm, wherein the hardenable steel has a material thickness in the range from approximately 2.0 mm to 10.0 mm wherein a weld seam is produced, at the weld line, without secondary heating and without a filler” (emphasis added).

Applicants respectfully assert that the prior art of record neither discloses nor suggests each element of independent claim 2, and as such, the rejection is in conflict with the rule of *In re Royka*. The Examiner admitted that *Clarke* fails to teach “energy per unit length is 234 J/mm to 3360 J/mm and the steel thickness being 2.0 mm to 10.0 mm,” but nevertheless stated that *Brenner* teaches “the parts have a 3.0 mm thickness” and that *Araki* “teaches... a welding current of 1500A and an arc voltage 36V for a power of 54kW at 300mm – 1500mm per minute for an energy per unit length of 2351.7 J/mm at 1.4m/min. ($P=IV$ and $54kW*43.55J/mm$).” See *Office Action*, page 3. Given this, the Examiner alleged that it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use an energy per unit length of 234 J/mm to 3360 J/mm, stating that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves routine skill in the art. See *Office Action*, page 4.

However, *Clarke*, *Brenner* and *Araki* taken individually or in any permissible combination, all fail to teach or suggest a process for joining components using a CO₂ laser in the range of 234 J/mm to 3360 J/mm without the use of an electrode filler material, as now expressly recited within

claim 2. Specifically, Araki fails to make up for the deficiencies of Clarke and Brenner.

Accordingly, independent claim 2 is patentable over the prior art of record.

Clarke and Brenner are directed to welding processes that do not use an electrode as a filler, while Araki is directed to a process for welding steel pipes through single or multi electrode MAG-welding with consumable electrodes. *See Araki, Col. 3, line 67 – Col. 4, line 15.* More specifically, Araki uses a large amount of welding energy to melt down the consumable electrode to provide additional filler material to the weld seam. Thus, because Araki clearly teaches the use of an electrode to provide filler at the weld seam, Araki teaches away from a welding process that utilizes a large amount of energy without the use of an electrode or other filler.

Moreover, one would not look to the parameters of a welding process that requires a large amount of welding energy to melt a filler electrode for a welding process that specifically does not use any type of filler, as one welding technology's parameters cannot be transferred to another welding technology's parameters. Thus, the Examiner's combination of Clarke, Brenner and Araki is improper, because the references are directed to different problems, that of welding two surfaces together without the use of a filler and welding two surfaces together with a filler electrode. Therefore, because Araki teaches away from not using a filler electrode, the combination of references is improper and should be withdrawn. Accordingly, for at least this reason Applicant respectfully requests reconsideration and withdrawal of the rejection.

Further, in the Examiner's Response to Arguments listed at Page 5 of the Office Action, the Examiner contended that the preheat cycle according Brenner is preformed before the actual welding process, and therefore no secondary heating is performed since heating does not occur after the welding process. *See Office Action, page 5.* Applicants respectfully disagree. Specifically, Applicants point to the present invention's Background section where the heating is referred to as "a common feature of all known attempts relating to the beam welding of hardenable steels is that the components are thoroughly preheated to a temperature of 400°C or above." *See Paragraph [0004].* Thus, Brenner clearly discloses this feature of preheating prior to welding. Specifically, Brenner clearly teaches "[l]aser welding is selected as the welding method. A 5.0 kW-CO₂-laser is used for the welding; the laser welding rate is 1.7m/min... After clamping the mechanically joined parts 1 and 2, they are moved at a rotational speed of 300 rpm. The *induction generator is set to a power of*

62 kW. After the end of the energy exposure period... the part 1 has a maximum temperature of approximately 655 °C ... and the part 2 a maximum exposure temperature 655 °C ... After a cooling time... the laser welding is begun" (emphasis added). See Col. 4, lines 33 – 45.

Additionally, Brenner clearly teaches that the **surface temperature after an 8 second cool down time period is approximately still at least 570°C**, which is when welding is performed with a laser power of 4.0 kW." See Col. 4, lines 46- 55. Thus, Brenner teaches at most a **pre-heat cycle** using an induction generator set to 62 kW heating the two parts to an approximate 655 °C, **letting the two parts cool for 8 seconds to a temperature of at least 570°C** and then welding the two parts with a 5.0 kW-CO₂-laser at a rate of 1.7m/min, which equates to 176 J/mm. Therefore, Brenner requires welding at 176 J/mm after the preheat, which is necessary to conduct a welding seam in high strength steel parts. Accordingly, Brenner fails to make up for the admitted deficiencies of Clarke and as such does not teach every recitation of independent claim 2, as required by *In re Royka*. For at least this additional reason, claim 2 is allowable over the recited combination.

Moreover, because both Clarke and Brenner specifically teach a pre-heat cycle, both Clarke and Brenner teach away from Applicants' independent claim 2, which positively recites a "process for joining components for torque transmission in a vehicle, the components being made from hardenable steel and having a material thickness, by producing a weld seam without secondary heating." See Clarke Col. 3, lines 4 – 6 and Brenner See Col. 4, lines 33 – 45.

Further, neither Clarke, Brenner or Araki teach "melting the steel in the vicinity of the weld line over the entire material thickness, wherein the energy per unit length introduced by the welding process is in the range from 234 J/mm to 3360 J/mm, and wherein the hardenable steel has a material thickness in the range from approximately 2.0 mm to 10.0 mm," as recited in Applicants' independent claim 2, as amended. However, the Examiner contended, in the Response to Argument section, that Clarke's FIG. 4 shows the steel being melted to the slot 126, which covers the entire thickness of the material. See Office Action, page 6. Applicants respectfully disagree. Specifically, FIGS. 3 – 5 merely illustrate the weld penetrating the weld joint at a minimal depth, which is nowhere near melting the material over the entire thickness of the material as required by Applicants' claim 2.

Moreover, Clarke's specification as filed is devoid of any indication that the proportions of the welded joint illustrated in Fig. 4 are drawn to scale. Thus, the Examiner's argument that because FIG. 4 shows the steel being melted to slot 126 that the entire thickness of the material is covered is based on an unsupported inference that the elements illustrated in Fig. 4 are indeed drawn to scale. *See Office Action, page 6.* In fact, "[o]rdinarily drawings which accompany an application for a patent are merely illustrative of the principles embodied in the alleged invention claimed therein and do not define the precise proportions of elements relied upon to endow the claims with patentability." *In re Olson*, 101 USPQ 401, 402 (CCPA 1954). Indeed, "[i]t is well known that Patent Office drawings are not normally drawn to scale, with the dimensions and sizes of parts shown to exact measurements as are shop drawings." *Id.* at 403.

Further, "it is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue." *Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000). Accordingly, the figure relied on by the Examiner to show complete weld penetration through the entire thickness is merely illustrative of the specific disclosure set forth in the specification, and without a clear description within the specification, cannot be relied upon.

Thus, because the combination of Clarke, Brenner and Araki fail to teach or suggest complete weld penetration, the illustration cannot be relied upon alone, as a description of the article pictured can only be relied on, in combination with the drawings, for what they would reasonably teach one of ordinary skill in the art. *In re Wright*, 193 USPQ 332 (CCPA 1997). The specification is completely silent on the issue of whether Fig. 4 may be relied on to show the weld depth size. That is, the Clarke specification does not specify that Fig. 4 is drawn to scale nor do the Brenner and Araki disclosures make up for this deficiency, as both fail to disclose weld depth across the entire thickness. Therefore, the Examiner's assertion that "Fig. 4 shows the steel being melted to slot 126, which allegedly covers the entire thickness of the material, is incorrect and cannot be used as the basis for an objection to claim 2.

Brenner and Araki both fail to make up for the admitted deficiencies of Clarke and as such the combination does not teach every recitation of amended independent claim 2, as required by *In re Royka*. For at least this reason, claim 2 is allowable over the recited combination. Furthermore,

dependent claims 14, 16, 18 and 20 – 26, being dependent upon independent claim 2, are patentable by virtue of their dependency upon allowable independent claim 2. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

III. Clarke as modified by Brenner and Araki, further in view of Kehrer

Claims 27-30 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Clarke as modified by Brenner and Araki and further in view of U.S. Publication No. 2004/0136776 to Kehrer (hereinafter, “Kehrer”). Applicants respectfully traverse the rejection.

Claims 27 – 30 are dependent on claim 2. The remarks presented above with respect to the § 103 rejection are equally applicable here. Specifically, the inadequacy of the combination of Clarke, Brenner and Araki to teach every element of independent claim 2 by not teaching any type of welding process “wherein the energy per unit length introduced... is in the range from 234 J/mm to 3360 J/mm” as claimed by Applicants’ independent claim 2 is also fatal to the Examiner’s § 103 rejection.

Nor does Kehrer make up for the deficiencies of Clarke, Brenner and Araki. More specifically, while Kehrer is directed to the welding of vehicle parts such as transmissions, wherein these parts are made from hardenable steel and are joined by plasma welding, Kehrer does not disclose any welding process “wherein the energy per unit length introduced... is in the range from 234 J/mm to 3360 J/mm, wherein the hardenable steel has a material thickness in the range from approximately 2.0 mm to 10 mm wherein a weld seam is produced, at the weld line, without secondary heating and without a filler” as claimed by Applicants’ independent claim 2. Therefore, the combination of Clarke, Brenner, Araki and Kehrer does not teach every recitation of independent claim 2. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Conclusion

In view of the above amendment and remarks, the pending application is in condition for allowance. If, however, there are any outstanding issues that can be resolved by telephone conference, the Examiner is earnestly encouraged to telephone the undersigned representative.

It is believed no fees are due with this response. However, if any fees are required in connection with the filing of this paper that are not identified in any accompanying transmittal, permission is given to charge our Deposit Account No. 18-0013, under Order No. 66969-0003 from which the undersigned is authorized to draw. To the extent necessary, a petition for extension of time under 37 C.F.R. §1.136 is hereby made, the fee for which should also be charged to this Deposit Account.

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Respectfully submitted,

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